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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/566,877	02/02/2006	Louis Robert Litwin	PU030187	1132

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EXAMINER	
BALAOING, ARIEL A	

ART UNIT	PAPER NUMBER
2617	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/566,877	LITWIN ET AL.	
	Examiner	Art Unit	
	ARIEL BALAOING	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 February 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,5-11,14 and 16-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5-11,14 and 16-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 March 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 02/08/2010 have been fully considered but they are not persuasive.

Regarding the applicant's arguments that:

"*The combination of Lira and Chitrapu does not yield Applicants' claimed invention. The plain language of Applicants' independent claims 1 and 14 is clear. A peak correlation value is associated with the first synchronization value (slot synchronization). This peak correlation value is then used to determine a number. This number is the number of frames to process the second synchronization channel to acquire* ***frame synchronization***" (see page 7 of the remarks; emphasis in original); the examiner respectfully disagrees.

Claim 1 recites the limitation:

"wherein the adaptively controlling step includes the step of:

determining a number of frames to process of the received wireless signal as a function of the peak correlation value; and

processing the second synchronization channel over the determined number of frames to acquire frame synchronization"

As interpreted, term "a number of frames to process" corresponds to one or more frames detected by the slot synchronization (i.e. over the first synchronization channel). The second synchronization channel is then processed over these determined frames to acquire frame synchronization. Therefore, LIM discloses this feature as claimed.

This is further consistent with teachings of Applicant's specification on paragraph 7 and 19. Paragraph 7 states that "*performs frame synchronization using a received second synchronization channel in such a way that the* ***received first synchronization channel is now used by the wireless receiver to adjust for frequency offset****. Thus, the effect of frequency offset on the process of frame synchronization is reduced, if not eliminated*" (emphasis added.) Frame synchronization occurs by determination of a frequency offset obtained from the slot synchronization. Paragraph 19 states that: "*[a]s such, each radio frame repeats a unique 15 SSCH code associated with a particular cell. Once activated by processor 135, SSCH* ***element 210 correlates the particular sequence of 15 SSCH codes in a received radio frame against known sequences for use in achieving frame synchronization*** *and for use in determining the scrambling code group of the cell (here, the scrambling code group associated with cell 15). As noted above,* ***the SSCH processing may require processing a number of received radio frames, e.g., 10 to 20. During this processing, PSCH element 205 is used by processor 135 to estimate frequency offset between cell 15 and UE 20***" (emphasis added). The specification does not recite a case wherein the frame processing is variable.

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1, 2, 6, 7, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over LIM et al (US 2003/0202541) in view of CHITRAPU (US 2003/0117979 A1).

Regarding claim 1, LIM discloses a method for using a wireless receiver [**UE**] (abstract), comprising: processing a first synchronization channel [**P-SCH**] of a received wireless signal to acquire slot synchronization (Figure 1; paragraph 11, 13, 18; slot timing acquisition from p-sch); adaptively controlling processing a second synchronization channel [**S-SCH**] of the wireless signal to acquire frame synchronization (Figure 1; paragraph 11, 13, 15, 18; frame synchronization using S-SCH corresponding to peak values detected from the P-SCH); wherein the step of processing the first synchronization channel includes the step of providing a peak correlation value associated with the first synchronization channel (paragraph 13, 15, 18; multipath search calculates correlation values and then detects a plurality of correlation values which are peak values and larger than or equal to a predetermined threshold value); wherein the adaptively controlling step includes the step of: determining a number of frames to process of the received wireless signal as a function of the peak correlation value (Figure 1; paragraph 11, 13, 15, 18; processing of frames corresponding to correlation values of P-SCH); and processing the second synchronization channel over the determined number of frames to acquire frame synchronization (Figure 1; paragraph 11, 13, 15, 18; frame synchronization occurs for each determined correlation value of the P-SCH). Although LIM discloses adaptive processing of a secondary channel (i.e. S-SCH) for acquiring frame synchronization, LIM does not expressly disclose adaptively

controlling a duration for processing a second synchronization channel. In the same field of endeavor, CHITRAPU discloses adaptively controlling a duration for processing a second synchronization channel (Figure 10; abstract; paragraph 6, 30, 46-49; a number of frames is dynamically processed according to a confidence value/threshold. Furthermore, a threshold can be used to filter identified peaks of a primary synchronization channel). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify LIM to include the teachings of CHITRAPU, since CHITRAPU discloses that such a modification would allow a system to reduce processing time and memory resources associated with cell search (see paragraph 7).

Regarding claim 2, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. LIM further discloses wherein the first synchronization channel is a primary synchronization subchannel and the second synchronization channel is a secondary synchronization subchannel of a universal mobile telephone system [**W-CDMA**] (paragraph 13).

Regarding claim 6, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. LIM further discloses wherein the step of processing the first synchronization channel includes the step of providing multiple correlation values, including the peak correlation value, associated with the first synchronization channel (paragraph 11, 13, 15).

Regarding claim 7, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. The combination of LIM and CHITRAPU further

discloses wherein the determining step determines the number of frames to process of the received wireless signal as a function of the peak correlation value and at least one other value (LIM – paragraph 18; CHITRAPU – paragraph 30; filtering based on threshold values).

Regarding claim 14, LIM discloses Universal Mobile Telephone System [**UE**] equipment (abstract) comprising: a front end for receiving a wireless signal representing a sequence of frames and for providing a stream of received samples therefrom (Figure 1; paragraph 11, 13, 18; slot timing acquisition from p-sch); and a processor for adaptively controlling of performing frame synchronization on the received samples (Figure 1; paragraph 11, 13, 15, 18; frame synchronization using S-SCH corresponding to peak values detected from the P-SCH); a primary synchronization element operative on the received samples for acquiring slot synchronization to a primary synchronization signal of the received wireless signal and for providing a peak correlation value associated therewith (paragraph 13, 15, 18; multipath search calculates correlation values and then detects a plurality of correlation values which are peak values and larger than or equal to a predetermined threshold value); and a secondary synchronization element operative on the received samples for acquiring frame synchronization to a secondary synchronization signal of the received wireless signal (Figure 1; paragraph 11, 13, 15, 18; processing of frames corresponding to correlation values of P-SCH); wherein the processor determines a number of frames for the secondary synchronization element to process for acquiring frame synchronization as a function of the peak correlation value (Figure 1; paragraph 11, 13, 15, 18; frame

synchronization occurs for each determined correlation value of the P-SCH). Although LIM discloses adaptive processing of a secondary channel (i.e. S-SCH) for acquiring frame synchronization, LIM does not expressly disclose adaptively controlling a duration for processing a second synchronization channel. In the same field of endeavor, CHITRAPU discloses adaptively controlling a duration for processing a second synchronization channel (Figure 10; abstract; paragraph 6, 30, 46-49; a number of frames is dynamically processed according to a confidence value/threshold. Furthermore, a threshold can be used to filter identified peaks of a primary synchronization channel). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify LIM to include the teachings of CHITRAPU, since CHITRAPU discloses that such a modification would allow a system to reduce processing time and memory resources associated with cell search (see paragraph 7).

Regarding claim 16, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. The combination of LIM and CHITRAPU further discloses wherein the processor determines the number of frames for the secondary synchronization element to process for acquiring frame synchronization as a function of the peak correlation value and at least one other correlation value (LIM – paragraph 18; CHITRAPU – paragraph 30; filtering based on threshold values).

3. Claims 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over LIM et al (US 2003/0202541) in view of CHITRAPU (US 2003/0117979 A1) and further in view of NEW (US 2003/0045299 A1).

Regarding claim 5, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. However, the combination of LIM and CHITRAPU does not expressly wherein the processing the second synchronization channel includes the steps of: comparing an estimated received sequence to each one of a plurality of possible received sequences, each sequence including a plurality of symbols; and after each comparison to one of the plurality of possible sequences, identifying one of the plurality of possible sequences as a possible best match; wherein, in the comparing step, if a number of mismatches for a current comparison is greater than or equal to a number of mismatches associated with the possible best match, the current comparison is abandoned and a new comparison is begun. In the same field of endeavor, NEW discloses wherein the processing the second synchronization channel includes the steps of: comparing an estimated received sequence to each one of a plurality of possible received sequences, each sequence including a plurality of symbols (**306,** paragraph 26, 33, 34; synchronization code represents a sequence of symbols); and after each comparison to one of the plurality of possible sequences, identifying one of the plurality of possible sequences as a possible best match (**308** paragraph 26, 33, 34); wherein, in the comparing step, if a number of mismatches for a current comparison is greater than or equal to a number of mismatches associated with the possible best match, the current comparison is abandoned and a new comparison is begun (**330, 336** paragraph 26, 33, 34, 40; predetermined number of verifications searches to be performed). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combination of

LIM and CHITRAPU to include the teachings of NEW, since NEW states that such a modification would allow a mobile device to synchronize to a base station during rapidly changing channel conditions (paragraph 12).

Regarding claim 8, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. However, the combination of LIM and CHITRAPU does not expressly wherein the step of processing the second synchronization channel includes the steps of: correlating the received wireless signal to provide an estimate of a received sequence over the determined number of frames; and comparing the estimated received sequence to each one of a plurality of expected received sequences to determine a number of matches thereto; and if the number of matches to at least one of the plurality of expected received sequences exceeds a predefined threshold, breaking out of the step of processing the second synchronization channel. In the same field of endeavor, NEW discloses wherein the step of processing the second synchronization channel includes the steps of: correlating the received wireless signal to provide an estimate of a received sequence over the determined number of frames (**306,** paragraph 26, 33, 34; synchronization code represents a sequence of symbols); and comparing the estimated received sequence to each one of a plurality of expected received sequences to determine a number of matches thereto (**308** paragraph 26, 33, 34); and if the number of matches to at least one of the plurality of expected received sequences exceeds a predefined threshold, breaking out of the step of processing the second synchronization channel (**330, 336** paragraph 26, 33, 34, 40; predetermined number of verifications searches to be performed). Therefore it would have been

obvious to a person of ordinary skill in the art at the time the invention was made to modify the combination of LIM and CHITRAPU to include the teachings of NEW, since NEW states that such a modification would allow a mobile device to synchronize to a base station during rapidly changing channel conditions (paragraph 12).

4. Claims 9-11, 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over LIM et al (US 2003/0202541) in view of CHITRAPU (US 2003/0117979 A1) and further in view of MATHEW et al (US 2004/0161020 A1).

Regarding claim 9, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. However, the combination of LIM and CHITRAPU does not expressly disclose wherein the adaptively controlling step includes the steps of: processing the second synchronization channel to form cumulative data representing a possible scrambling code group comprising an M symbol sequence; determining a number of matches between the M symbol sequence of the possible scrambling code group and each scrambling code group of a set of scrambling code groups; and if the determined number of matches for at-least-one scrambling code group of the set of scrambling code groups exceeds a predefined value, selecting the at-least-one scrambling code group as the scrambling code group for use in acquiring frame synchronization. In a similar field of endeavor, MATHEW discloses wherein an adaptively controlling step includes the steps of: processing the second synchronization channel to form cumulative data representing a possible scrambling code group comprising an M symbol sequence(Figure 4, 7; paragraph 35, 37-39; correlation of each scrambling code group); determining a number of matches between the M symbol

sequence of the possible scrambling code group and each scrambling code group of a set of scrambling code groups (Figure 4, 7; paragraph 35, 37-39); and if the determined number of matches for at-least-one scrambling code group of the set of scrambling code groups exceeds a predefined value, selecting the at-least-one scrambling code group as the scrambling code group for use in acquiring frame synchronization (Figure 4, 7; paragraph 35, 37-39; correlation of consecutive slot boundaries). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combination of LIM and CHITRAPU to include the teachings of MATHEW, both systems provide synchronization based on primary and secondary codes and would allow threshold based determination of candidate code groups.

Regarding claim 10, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. The combination of LIM, CHITRAPU, and MATHEW further discloses wherein the selecting step includes the step of halting further processing of received frames in the received wireless signal (MATHEW – Figure 4; processing of code groups ends when code is declared scrambling code for the cell).

Regarding claim 11, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. The combination of LIM, CHITRAPU, and MATHEW further discloses wherein the selecting step includes the step of: if more than one scrambling code group of the scrambling code group set exceeds the determined number of matches, selecting the scrambling code group with the most number of

matches (MATHEW – Figure 4; paragraph 37-39; group providing maximum correlation is chosen from groups above peak threshold).

Regarding claim 17, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. However, the combination of LIM and CHITRAPU does not expressly disclose wherein the secondary synchronization element operative on the received samples subsequent to slot synchronization also provides a possible scrambling code group comprising an M symbol sequence; wherein the processor (a) determines a number of matches between the M symbol sequence of the possible scrambling code group and each scrambling code group of a set of scrambling code groups, and (b) if the determined number of matches for at-least-one scrambling code group of the set of scrambling code groups exceeds a predefined value, selects the at-least-one scrambling code group as the scrambling code group for use in acquiring frame synchronization. In the same field of endeavor, MATHEW discloses wherein the secondary synchronization element operative on the received samples subsequent to slot synchronization also provides a possible scrambling code group comprising an M symbol sequence (Figure 4, 7; paragraph 35, 37-39; correlation of each scrambling code group); wherein the processor (a) determines a number of matches between the M symbol sequence of the possible scrambling code group and each scrambling code group of a set of scrambling code groups, and (b) if the determined number of matches for at-least-one scrambling code group of the set of scrambling code groups exceeds a predefined value, selects the at-least-one scrambling code group as the scrambling code group for use in acquiring frame synchronization (Figure 4, 7; paragraph 35, 37-

39; correlation of consecutive slot boundaries). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combination of LIM and CHITRAPU to include the teachings of MATHEW, both systems provide synchronization based on primary and secondary codes and would allow threshold based determination of candidate code groups.

Regarding claim 18, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. The combination of LIM, CHITRAPU, and MATHEW further discloses wherein the processor halts further processing of received frames in the received wireless signal if the determined number of matches for at-least-one scrambling code group exceeds the predefined value (MATHEW – Figure 4; processing of code groups ends when code is declared scrambling code for the cell 4).

Regarding claim 19, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. The combination of LIM, CHITRAPU, and MATHEW further discloses wherein if more than one scrambling code group of a scrambling code group set exceeds a determined number of matches, the processor selects the scrambling code group with the most number of matches (Figure 4; paragraph 37-39; group providing maximum correlation is chosen from groups above peak threshold).

Conclusion

2. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ARIEL BALAOING whose telephone number is (571)272-7317. The examiner can normally be reached on Monday-Friday from 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, V. Paul Harper can be reached on (571) 272-7605. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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